

## DEVELOPING WALL CLOCKS AS HEALTH PROMOTION MEDIA FOR HOUSEWIFE TARGET IN THE PREVENTION OF DENGUE HEMORRHAGIC FEVER (DHF) IN INDRAMAYU

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### Abstract

Up to 2012, Larva-Free Numbers Dengue (ABJ) in Indonesia was still low, as well as in Indramayu, which is still below the target, which has only reached 80 % of the target of 95 % . ABJ target achievement done by the efforts of The Eradication of DHF Mosquito Breeding Place (PSN - DBD). Housewife role in doing PSN-DBD is very important. Health promotion media could encourage housewife in doing PSN - DBD. The aim of this study was to develop clocks as a health promotion media to target housewives in the DHF prevention in Indramayu .

This type of research was action research. The population in this study were housewives. For developing wall clocks, purposive sampling was taken by certain criteria of 10 housewives, the data collected and analyzed using qualitative analysis. For testing clocks product sample, sample numbers of 30 housewives were taken, data were collected and analyzed by using quantitative descriptive analysis.

This research has produced a wall clock with shapes, images, text, color, sound reminder ( alarm) in accordance with the character of housewives. The trial results of wall clocks as health media promotion for DHF prevention, suggested that there were differences in the housewives PSN-DBD action and differences also in the presence of dengue mosquito larvae in water storages in the home and surrounding environments before and after the test sample product media. Larger samples and longer duration of intervention needed to test the effectiveness this media.

**Keywords:** Wall Clock, Housewife, DHF Prevention

### A. Introduction

Indramayu is one of the districts in West Java province where dengue cases in 2012 increased mortality (Case Fatality Rate) from 1.19% to 3.42%. The high prevalence of dengue can not be separated from the high risk factors of transmission in the community like Larva-Free Numbers Dengue (ABJ) was still below 95%, ie 84.38% of homes by 2012 which was free of *Aedes sp* larvae (Dinas Kesehatan Indramayu, 2013) <sup>(1)</sup>. In an effort to control mosquito larvae, the activities carried out are The Eradication of DHF Mosquito Breeding Place (PSN-DBD), which includes: draining water tanks, closing water reservoir, burying wastes which become mosquito breeding, and sprinkled larvasida (abate) commonly known as (3M Plus). If the activity is performing well, then the potential

dengue transmission will be reduced significantly. But seen from the data, numbers of PSN-DBD community participation in activities is still low. Its proven by the achievement of the ABJ was still less than the target indicators of the success of PSN-DBD which should reach at least 95% (MOH Director General P2M & PL, 2005).<sup>(2)</sup> PSN-DBD in Indramayu still be activities that are difficult to implement, even though public health education activities carried out on an ongoing basis by health official office. If people do bad PSN (3M plus) in everyday life, people will be at risk of 8.13 times greater risk of dengue disease and vice versa if people apply good PSN (3M plus) recurring then the number of larvae will be reduced, so that the practice of PSN (3M plus) have a strong correlation with the number of larvae (Widagdo et al, 2008) <sup>(3)</sup>. For the success of

PSN-DBD within the scope of the family needed awareness of the housewives, as a housewife became a member of the family that plays a major role in keeping the house and the environment clean. Many factors can influence the behavior of housewives in conducting PSN-DBD. According to the theory Precede-Proceed from Lawrence Green <sup>(4)</sup>, factors that influence health behavior consists of 3 factors which include: Predisposing Factors (in people who behave), Enabling (of an enabling environment), and Reinforcing (others are pushing to behave), Enabling factors related to PSN-DBD is media exposure counseling. Machfoed and Suryani (2009) <sup>(5)</sup> stated that in order to support the knowledge and attitude toward PSN-DBD needed media exposure extension which functions as a distributor of health messages, the media is divided into three, namely: printed media, electronic media, and media exposure. Reinforcing factor in this context is the support from the social environment as well as health workers. (Purba et al, 2007) <sup>(6)</sup>

The target of this study were housewives who have roles in efforts to eradicate the disease, whether it concerns prevention, treatment and rehabilitation always involve women, especially housewives which is positioned as a care giver in every family. The skills of health care for families affected by the knowledge and experience of a person, a housewife who has a lot of knowledge to be more skilled than less. Thus the knowledge will influence how women treat themselves and their families associated with the disease. (Pujiyanti and Triratnawati, 2011) <sup>(7)</sup>

To prevent the spread of dengue need prevention efforts focused on eradication mosquito breeding place (PSN). Health promotion need to be done to target housewives, in order to actively participating in PSN. In health promotion targeting housewives, of course, has to use the media in accordance with the wishes and character of housewives. Media in accordance with housewives, and which developed in this study was a wall clock that visually adopting of posters media, but coupled with exposure to audio as a reminder (alarm).

## **B. Method**

In this study, the stages of the activities carried out starting from the permitting process of research devoted to the relevant parties, the next data collection both primary data and secondary data. The location study was conducted in Indramayu district, which includes 3 area of the Village, the Village of Terusan, Pabean Udik, and Karangsong. The implementation of the research was conducted from February to October 2015 .

This research type was an action action research <sup>(8)</sup>, which was making health promotion media in the form of a wall clock. The study began with the making of wall clock design, then do the pretest design, focus group discussions and interviews on target housewives. In addition, by conducting interviews also with the stakeholders which include the Head of Health Official, Head of Health Promotion Official. DHF Prevention Program Holder of Public Health Center. Opinion from health promotion media expert also requested (expert reviewed). The research followed by improvement (revision). Creating a final design and then followed by manufacturing of product samples, and testing samples of media products. The phase in making wall clock as a health promotion media adopted P-Process Theory<sup>(9)</sup>

The data analysis research conducted with qualitative analysis to the process of making media and quantitative analysis of the trial test of sample product media. Informants in this study were housewives selected purposively, Focus Group Discussion (FGD) and participants indepth interviewed conducted to pre-test media design drawn as many as 10 people a housewife from the village of Terusan. For testing purposes the media, taken a sample of 30 housewives, selected purposively from 3 Village, the Terusan Village, Pabean Udik Village, and Karangsong Village, it's sample taken 10 housewives with criteria between the ages of 18-50 years, lowest educated is elementary school, not working, and willing to become respondents.

### C. Results and Discussion

Preliminary wall clock design that has been made was done by implementing FGD pre-test, the informant was the housewife who qualify as many as 10 people. This was in accordance with the terms for the acquisition of the good results of poses FGD was between 8-12 respondents. In addition to pretest the media, was also carried out in the form of expert review by health promotion media expert.

To pre-test the housewife target questions include: sound reminder alarms ( audio), color, text, placement, photos/images, shape, suggestions for improvement of the look and sound of wall clocks.

The results obtained from test (pretest) design made to informants housewife In the aspect of the sound wall clock, housewives prefer a voice message was a call to implement hygiene behaviors. The following were informant statements:

*"...it's time for cleaning, it's like that Sir,...using alarm, Sir...(11)"*

*"...It's like an alarm, said its time for cleaning...(12)"*

From the statement of the housewives , it is known that the prevention of transmission of dengue fever is strongly associated with efforts to clean up the home environment. So that the housewives can choos wall clock reminded to implement environmental hygiene behaviors.

In addition to the message contains a call to carry out hygiene behaviors, also need to be praised from the others. These were informant statement:

*"...For being encouraged, we need to be praised first (laugh) (13)"*

*"...mother who loves their family...(14)"*

From the statements of informants

note that praise/recognition is a tribute to them will make them more eager to carry out dengue prevention measures. So that the audio sound wall clock should contain words of praise to the housewife. As in Maslow's theory states

that the recognition/award is one of the human needs that must be met. Abraham Maslow et al<sup>(10)</sup> Rahmawati suggests that basically human beings have basic needs where the basic needs that consists of physiological needs (hunger and thirst), safety needs (to feel safe and protected, away from the dangers), need for love and belonging (affiliated with the others, received, have), need for appreciation (achievement, competence, and get support and recognition), need for self-actualization (cognitive needs, know, understand, and explore). (Herzberg, 1966)<sup>(11)</sup> . From the sound wall clock that contains an invitation, the housewife wanted that they need words to make them feel proud and recognized role, this was in accordance with the level of psychological needs: the need for an award.

In the aspect of time or when the clock sounding, the informant chose the morning at 6 am, and the afternoon at 16.00, following was an excerpt answers from respondents :

*"...at 6 a.m. school children having breakfast....the father also....so at that time we are gathering....(15)"*

*"...at 4 p.m. ...yes.. I stay at my home (16)"*

Rosalinda, et al (2007)<sup>(12)</sup> revealed that time is something that is important in human life, time is also an opportunity that is used to perform various activities. The process of perception can be obtained from the hearing, seeing and feeling with such a perception is the process of how stimuli (stimulus) was selected, organized and interpreted (Triyono Elfina et al ,2014).<sup>(13)</sup> Kardes Elfina et al (2014)<sup>(14)</sup> stated that an advertising message repetition time, could have an effect on changes in knowledge, attitudes, and behaviors of the target. So that a same information that continues repeated will eventually make remembering the message. Researchers found that optimal repetition limit are three times, the so-called three- hit theory (Schiffman and Kanuk Elfina et al, 2014).<sup>(15)</sup> This is similar to the model used in using wall clock in this study, the message playback only twice, 06:00 a.m. and 16:00 p.m.. In accordance with

the timing given by the informant. In the case of the current selection when the clock should ringing and gave them messages, housewife chose during the morning and afternoon, which at that time the housewives gathered with their families and not being to have activities outside the home. So that they could be exposed properly by the information of the wall clock. Related to whose voice that informant want to hear delivering the message. The housewives prefer children and gentlemen voices. These were the informant statement:

*"....preferring voice of children... being encouraged if listening children voice, Sir ...(15)"*  
*"....for me preferring sound of gentlemen voice ....(17)"*

From the opinion of the informant can be seen that housewives liked the sounds that represent their family to be included as voice alarm clock.

In the aspect of color for a wall clock, informants liked bright colors, the following are informant statement:

*"...I prefer red color for brightness (18)"*  
*"....blue, blue is bright...(10)"*

Hurlbert <sup>(16)</sup> from the University of Newcastle stated that most women in their 20s prefer a combination of red and blue, color games are widely applied in the design of both the product design, interiors, fashion and so on. Color selection is a subjective thing. In general there are some colors that have a universal effect, for example, the red color is known as a warm color and is known to evoke emotions and influence the psychological effect for the observer and wearer. The use of an appropriate color will give the impression of joy and use the right colors not only make beautiful and have an effect on psychological, but there are also economic benefits (Moekijat, 2002). <sup>(17)</sup>. From the color of choice of informants, it is understandable that the informants were all women choose bright colors. So that in making design revisions will combine bright colors on the display wall clock.

It also includes a choice of colors for the font will also be using the dominance of red and blue, to give spirit to housewives in preventing dengue.

In the aspect of the image in the clock design, the informant felt it was pretty good, but felt still less encouragement for housewife to implement PSN DBD, the following are informant statement:

*"....enough...that is enough...(15)"*  
*"...Im spirited...if I have... (15)"*

Picture is an important thing that could support the message content to be captured well by the target media health promotion. So the media wall clock is also equipped with a display image/picture messages to be easily understood by the target and visually display media become more attractive. In this case the clock serves as a visual medium. Audio-visual media is media that convey messages through the senses of sight and hearing can stimulate thoughts, feelings, attention and willingness (Muthmainnah, 2013) <sup>(18)</sup>. In this study, coupled between the visual with the audio, so that the message delivered to more easily captured by the target. According Hujair Sanaki AH et al (2012) <sup>(19)</sup> audio-visual has several advantages, namely audio visual has a special attraction that can be a trigger or motivate learners to learn, increase endurance memory or retention of learning objects are studied and portable or easily distributed.

In the aspect of the placement of a wall clock, the informant chose the second place of installation that was on the wall and near the television, so that can always be visible, these were informant statement:

*"....on the wall near television, so we can always see the clock automatically...(18)"*  
*"....that's better lookslike...near the television, ...will be frequently seen although the clock only alarming 2 times per day...(17)"*

This is in accordance with Amalia ( 2013) <sup>(20)</sup>, which stated that the success of communications

media supported by several factors such as the placement or how the media can increase feeling interested and understanding of the audience. Visual media closer to the audience or target is one way to increase the success of communication. The placement of health promotion media, in this case the clock in a place easily seen by the target housewives to foster the desire to follow the message. The sense of sight and hearing should be facilitated in reaching the target position or location health promotion media, so it could be attracted the attention. (Iversen et al . 2007) <sup>(21)</sup>

In the aspect of the form of clocks, the informant chose the form of a rectangular box, because the shape of the perceived unique and different from the wall clock in general, the following were informan statement:

*"...for me the...rectangular shape...  
...round shape is too usual...(13)"  
"...rectangular is unique shape...(18)"*

From that opinion of the informant could be understood that the housewives want the display of wall clock will be different from the clock that has been used to obtain on the market.

Based on input from one health promotion media expert, there were several input to revise the design: Message tagline should provide motivation to encourage housewives conducting PSN-DBD. PSN-DBD information (3M Plus) should be given a picture/photograph in order to facilitate the goal of understanding the information. Sound/voice messages, must be audible intonation, and not too fast. This media regarding his time as distinctive character, so that the information need to enter a time when the dengue mosquito bites, facilitating targeted to avoid mosquito bites.

After getting feed back from the pretest design, the wall clock undergone several changes in both the color, the contents of the message, picture, or voices. Based on the feed back from the pretest, wall clock design changes are includes:

### **The wall clock visual appearance:**

Improved theme was to motivate housewives in order to implement preventive behavior to implement 3M Plus. Housewives not merely be given information about how to implement 3M, but also reminded and motivated to carry both visual and audio .

Shape wall clock, tailored to what is preferred by the target, namely, a rectangular-shaped box, which was then refined with the ergonomic curved edge list.

Place/location of installation of the wall clock is inside the house, which allows it to be placed on a wall or near a television. So that the wall clock design allows it to be installed on the wall or stand on a table . The dominant color of the wall clock use of bright colors, the basic color display face was white, then to the side and rear body color was blue.

Writing messages conveyed in visual wall clocks include the main message ( tagline), namely: "Mama 3M Plus, Family's Hero", was used to give a sense of pride housewives (target) that they has a major role in preventing the family from DHF infection. That tagline sentence was given a red color, so it had contrast against the background color. The color red is psychologically give a description of the spirit or struggle. Tagline was positioned uppermost on the visual display wall clock, and using font type Arial, which made it easier to read for the target. The size of the more than 20 point. With the hope of getting to make the target easier to read and easier to remember.

The other suggestion was the text that contains information about precautions against mosquito bites, which reads : "Beware of Dengue Mosquito Bite" with a red color that contrasts with the background color white. Underneath there was a written explanation of a mosquito bite " 6-9 am " and " 3-5 pm " in blue color. The position of this paper aligned with the position of digital clocks, which shows the importance of understanding a mosquito bites, in order to avoid it.

The next sentence was "Do 3M Plus", followed in succession underneath the tagline with variations of colors highlight to clarify the



content of the 3M Plus are: Cleaning nad Draining Bath, Covering Water Reservoir, Recycling Used Goods, Using Larvicides, Checking Mosquitos Larvae.

There was a space 3R photos (3.5 x 5 inch) to insert family photos, the windshield of the photo space, there are the words "DHF Free, Healthy Families" The size of a wall clock 25 cm long and 18 cm wide.

The final design visual wall clock could be showed as in the picture below:



Figure 1. Final Design Wall Clock

#### The final design sounds alarm clocks:

Gentlemen voice: "Come on Mom!.. did 3M Plus, as evidence of that you love your Family"

Children voice: "Come on Mom! ... Do 3M Plus as a proof that you love your family"

Women voice: "Let's go Mom, check the larvae and do 3M in home and surrounding environment, thanks"

The final design of the wall clock was then made into a media product samples. Wall clock product samples, tested in three villages, namely: Terusan, Karangsong, Pabean Udik, involving 30 housewives with 10 housewives distribution per village. Intervention trials using clocks as health promotion media carried out with a duration of one week (7 days) per respondent. The data comparison was the presence of mosquito larvae at the water reservoir area in the home, surrounding environment and housewives PSN- DBD (3M) activity before and after exposure.

#### Data Analysis Results from Trial Implementation Media (Clocks)

Based on the monitoring of the presence of larvae of Aedes sp . Before and after the media exposure clocks, obtained the following results:

Table 1. Comparison of presence of dengue mosquito larvae before (Pre ) and already (Post) Exposure Wall Clock (n = 30 respondents) .

| No    | Type and Number Water Storage      | (+ )Larvae (Pre) |      | (-) Larvae (Post) |      |
|-------|------------------------------------|------------------|------|-------------------|------|
|       |                                    | Freq.            | %    | Freq.             | %    |
| 1.    | Bathroom Water Reservoirs (20)     | 15               | 75   | 5                 | 25   |
| 2.    | Home water reservoirs (17)         | 10               | 58,8 | 3                 | 17,6 |
| 3.    | Flower Vase (2)                    | 1                | 50   | -                 | 0    |
| 4.    | Waste Water Bin from Dispenser (4) | 2                | 50   | -                 | 0    |
| 5.    | Gutter (16)                        | 9                | 56,2 | 6                 | 37,5 |
| 6.    | Waste bucket (2)                   | 1                | 50   | 1                 | 50   |
| 7.    | Waste bottles (5)                  | 2                | 40   | -                 | 0    |
| 8.    | Waste cans (3)                     | 1                | 33,3 | -                 | 0    |
| Total |                                    | 41               |      | 15                |      |

Based on the analysis of the survey the presence of larvae of Aedes sp home respondents showed both before and after exposure clocks, almost all types of Water Reservoirs (Tempat Penampungan Air/TPA) positive for Aedes sp, the total amount of TPA positive larvae before exposure at the clock as much as 41, but after exposure clocks TPA positive number of larvae decreased to 15. With the details of as many as 41 TPA are positive presence of larvae of Aedes sp before exposure bathroom water reservoir as many as 15 (75%) positive mosquito larvae, home water reservoir by 10 (58.8%) positive mosquito, flower vases 1 ( 50%) positive mosquito larvae, water waste bin dispenser 2 (50%) positive mosquito larvae, gutter as much as 9 (56.2%) positive mosquito larvae, waste bucket 1 (50%) positive mosquito larvae, waste bottles of 2 (40%) positive larvae, waste cans as much as 1 (33.3%) positive mosquito larvae. After being exposed to the wall clock TPA positive number Aedes sp were reduced to 15 positive mosquito larvae. Bathroom water reservoir that there were presence of larvae after being exposed to wall clock was 5 (25%) positive mosquito larvae, home water reservoir 3 (17.3%) positive mosquito larvae, gutter 6

(37.5%) positive larvae, and waste buckets numbered 1 (50%) positive mosquito larvae. Based on the data it could be concluded after being exposed to the clock there were decrease in the presence of larvae of *Aedes* sp at each water storage place.

#### PSN-DBD Housewives Behavior Analysis before and after Exposure Wall Clock

Based on the results of behavioral data collection through questionnaires before and after the clock media exposure obtained the following results:

**Table 2.** Analysis of PSN-DBD Housewives Activity Before (Pre) and After (Post) Exposure Wall Clock (n = 30 respondents)

| No | Activity                                 | Before (Pre) |      | After (Post) |      |
|----|--|--------------|------|--------------|------|
|    |  | Freq.        | %    | Freq.        | %    |
| 1. | Conducting PSN-DBD (3M)                  | 19           | 63,3 | 27           | 90   |
| a. | Cleaning & Drying Bathroom Water Storage | 13           | 43,3 | 20           | 66,7 |
| b. | Recycling of Used Goods                  | 12           | 40   | 9            | 30   |
| c. | Covering Water Reservoirs                | 16           | 53,3 | 22           | 73,3 |
| d. | Using of larvacida (abate)               | 4            | 13,3 | 2            | 6,7  |
| e. | Checking Larvae in the Water Reservoir   | 7            | 23,3 | 17           | 56,7 |
| f. | Burying waste goods                      | 2            | 6,7  | 1            | 3,3  |

Based on the results of the questionnaire after the analysis, obtained a description of the respondents were implementing PSN-DBD activity before exposure to a wall clock as much as 19 (63.3%) of respondents, cleaning and draining bathroom water reservoir as much as 13 (43.3%) of respondents, recycling of used goods as many as 12 (40 %) of respondents, covering the water reservoirs as many as 16 (53.3%), using larvacida (abate) 4 (13.3%), checking larvae 7 (23.3%), burying waste goods 2 (6.7%). After the exposure of the wall clock found an increase of 27 (90%) of respondents who did PSN-DBD, cleaning and draining bathroom water reservoir as much as 20 (66.7%), recycling used goods as much as 9 (30%), covering water reservoir as much as 22 (73.3%), using larvacida

2 (6.7%), checking larvae 17 (56.7%), burying waste goods as much as 1 (3.3%) of respondents.

From the table it could be showed there was an increase in PSN-DBD housewives activity after being exposed by wall clock. It is indicated that wall clock could be influence awarness housewives to do activity preventing DHF.

#### D. Conclusion

1. Health promotion media were developed to target housewives in the prevention of dengue fever was in the form of a wall clock, which the message of dengue prevention could be viewed and heard by housewives. This media is consistent with the characteristics of housewives who need a reminder to be able to carry out the PSN DBD (3M) well. This wall clock has a rectangular shape, with bright colors, and an alarm sound reminder that contain messages for implementing PSN-DBD.
2. Themed of wall clock developed related to a very large housewives role in preventing the spread of dengue fever in the family. Media was developed by considering the character, tastes, desires of housewives. Once exposed by this wall clock, expected housewives become motivated to regularly and sustainably implement the PSN DBD (3M). So that the dengue mosquito couldn't breed, the number of larvae is reduced, and the transmission (morbidity) DBD decreased. This wall clock mounted in the living room, could be wall or positioned on a table near the television, so easily viewed and heard its message by housewives.
3. The result of wall clock trial test, there were difference numbers the presence of dengue mosquito larvae between before and after exposure to them. The presence number of larva in water reservoirs at the time of observation after exposure decreased compared to before exposure. Based on activity PSN-DBD (3M) data comparison before and after exposure wall clock, there were increased activities of housewives of the percentage, especially in the activities of the cleaning and draining bathroom water reservoir, covering home water reservoirs,

and checking the larvae. Further research will be needed with a larger sample size and longer duration of exposure to assess the effectiveness of this wall clock media in enhancing the role of the housewives implementing DHF prevention.

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